

DOCUMENT RESUME

ED 237 247

RC 013 778

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TITLE Instructional Technology Needs in Rural Special Education.
PUB DATE 11 Feb 83
NOTE 21p.; Paper presented at the Annual Research in Action Conference (2nd, Lubbock, TX, February 11, 1983).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Administrator Attitudes; Computer Assisted Instruction; Computer Managed Instruction; *Educational Technology; Elementary Secondary Education; *Needs Assessment; Rural Education; *Rural Schools; Small Schools; Special Education; *Special Education Teachers; Staff Development; State Surveys; *Teacher Attitudes; Teacher Improvement
IDENTIFIERS *New Mexico

ABSTRACT

A New Mexico study interviewed 1 special education teacher and 1 administrator from each of 17 small rural school districts, via a 65-item interview guide related to staff development needs. Lack of staff development activities was identified as a critical problem for special educators. Training in instructional technology was the most frequently mentioned inservice need. A majority of respondents (91%) indicated that instructional technology would be useful in the provision of special services. Most respondents (94%) felt competence in instructional technology would improve special educators' effectiveness in the classroom, but response to the question of whether competence in this area would improve special education administrators' effectiveness was mixed. A final section of the paper describes specific instructional/educational technology applications, including New Mexico State University's preservice/inservice teacher education program for special education, which trains students in computer-managed instruction and computer-assisted instruction. (Author/MH)

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ED237247

Instructional Technology

Needs in Rural

Special Education

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Paper presented at the Second Annual Research in Action Conference,
Texas Tech University, Lubbock, TX, February 11, 1983.

Running Head: Instructional Technology

RC 01 3778

Abstract

One special education teacher and one administrator from each of 17 small rural school districts ($N = 34$) were interviewed via a 65-item interview guide relative to staff development needs. A lack of staff development activities was identified as a critical problem for special educators in such districts in New Mexico. Training in the area of instructional technology was the most frequently mentioned inservice need. A majority of respondents indicated that instructional technology would be useful in the provision of special services. The vast majority of respondents felt competence in instructional technology would improve the special educator's effectiveness in the classroom, while the response to the question of whether competence in this area would improve the special education administrator's effectiveness was mixed. Specific instructional/educational technology applications are described in the concluding section of the paper.

Instructional Technology Needs in Rural

Special Education

Introduction

Providing adequate services to exceptional learners has always presented a problem to educators in rural areas. Historically, rural school districts have served only a small portion of mild to moderately exceptional students. These students were usually thought of as "backward" or "slow" and rarely received any special help. Students whose academic performance or social behavior deviated more significantly were either institutionalized or kept home.

Over time, rural special education programs have improved in terms of quality and availability, but growth has not always been at the same rate as in larger urban areas. Recent Federal legislation has offered a great challenge to rural educators. November of 1975 saw the enactment of The Education for All Handicapped Children Act (Public Law 94-142). This law (which was implemented in 1978) guarantees a free and appropriate education for all exceptional students. The challenge, then, became the degree to which rural school districts could meet this mandate.

Cole and Ranken (1981) stated that:

Rural school districts have frequently come under fire for not providing as high quality services to exceptional students as urban districts. Although this may be true

in some cases, the real problem lies in the fact that most models for special education program implementation have been developed in urban areas. While many of these programs have been successful in urban settings, attempts to implement the programs in rural areas often have had disappointing outcomes. In some cases, this has resulted in the belief that rural educators, regular and special, are less competent and/or lack the dedication of their urban counterparts. The reality is that urban special education program models cannot automatically be assumed to be wholly exportable to rural areas. (p.1)

Purpose

The purpose of the present paper is to focus on the findings which relate to the perceived usefulness of instructional technology as a component within the total staff development program. The findings were derived from the total findings of a larger study conducted at New Mexico State University (NMSU) by Wirth (1982). The study was concerned with problems, needs, and strategies of educators in New Mexico's small, rural school districts. The following three general research questions were investigated in that study:

1. What are the problems of small rural public school districts in New Mexico in providing special education services to exceptional children as they are perceived by special education administrators and special education teachers?
2. What are the strategies that have been employed by small rural public school districts in New Mexico to overcome problems in providing adequate special education services for exceptional children?

3. Do special education administrators and special education teachers differ in opinion on the ranking of problems or on the severity of problems in providing special education services in the small rural public school districts of New Mexico?

Methodology

For purposes of this study, "small" was defined as districts with an average daily membership of 300 or less. "Rural" was defined as a district in which the number of inhabitants is less than 150 per square mile, or located in a county with 60% or more of the population living in communities no larger than 5,000 inhabitants (Helge, 1979). The definition of "instructional technology" was derived from the earlier definition of the President's Commission on Instructional Technology (1970). The definition which appeared on the interview guide was as follows (Wirth, 1982): "a systematic way of employing a combination of human and nonhuman resources to bring about more effective instruction" (p. 298). In addition to the stated definition, several specific examples of instructional technology such as programmed instruction and microcomputer applications were provided to the interviewees.

The "Small Rural School District Special Education Interview Guide" (Wirth, 1982) was developed to facilitate data collection through a method using the following six steps:

1. Formation of research questions and interview schedule by the researcher.
2. Review of the research questions and interview schedule by a faculty committee at New Mexico State University.

3. Revision of these documents by a qualified editor/technical writer.
4. Review of the research questions and interview by a national panel of rural special education experts.
5. Pretest of interview schedule.
6. Pilot test of the schedule in two New Mexico public school districts with average daily members between 300 and 500.

The final document included 65 questions which provided information relative to the three general research questions and eight research areas. These eight research areas were:

1. Student programs and services
2. Transportation
3. School finances
4. Staffing/recruitment
5. Staff retention
6. Staff development
7. Equipment and materials
8. Other problems

As defined above, there are 20 "small-rural" public school districts in New Mexico. Both administrators and teachers in 17 of these districts were interviewed via the interview guide and from their responses, answers to the general research questions were derived. Of the 65 items, 14 were specifically focused on problems and strategies relative to staff development and use of instructional technology.

Results

Provision of staff development opportunities for special education teachers and related service professionals was considered a "severe" or "moderate" problem by 74% of those interviewed, including 71% of the teachers and 77% of the administrators. Both teachers and administrators in 10 school districts (59%) felt the provision of staff development opportunities was a "severe" or "moderate" problem, while both respondents in only two school districts (12%) felt that little ("minimal") or no problem existed.

The need for inservice training for special education teachers and related service professionals is presented in Table 1. Of the 10 specific areas addressed, a majority of the interviewees indicated inservice training was a necessity in nine areas. The three areas where 60% or more of the total interviewees indicated the need for inservice training were instructional technology (91%), assessment/diagnosis (73%), and curriculum content (68%).

Insert Table 1 about here

It is interesting to note the high frequency of disagreements between the teachers and administrators within school districts. Overall, a majority of the administrators felt inservice training was necessary in all 10 areas suggested. However, a majority of the teachers regarded inservice training a necessity only in the areas of curriculum content, instructional strategies, assessment/diagnosis,

and instructional technology. Overall, the most frequently cited area of need was inservice training in instructional technology.

The perceived usefulness and effectiveness of instructional technology in the small rural public school districts is described in Table 2. Instructional technology was considered potentially valuable for the provision of special services by both the teachers and administrators in 14 school districts (82%) and overall by 91% of the respondents. However, in the areas of staff recruitment, staff retention, and reduction of costs of services, 35% or less of the individuals interviewed felt that application of such technology would be beneficial.

Insert Table 2 about here

Both respondents in 15 school districts (88%) and 94% of all interviewees felt competence in instructional technology would improve the special education teacher's effectiveness in the classroom. Potential applications of instructional technology most frequently cited were (a) individualization of instruction, (b) development of alternative teaching strategies, and (c) systematic use of reinforcement.

The special education teachers and administrators in four school districts (24%) and 47% of the total individuals polled felt competence in technology would improve the administrator's effectiveness relative to the development of the total special education program. Respondents most commonly indicated that administrators could use

the existing technology for special education program planning, and recording and maintenance of student IEPs. Those who felt that gaining competence in technology would not improve the effectiveness of the administrator most frequently explained that the school district was too small for this to be a viable strategy, while others questioned the willingness of administrators to apply the existing technology.

In a related area of inquiry, microcomputers and other hardware were the most frequently cited materials/equipment need identified by teachers and administrators in the districts, despite the fact that none of these items were available in the 17 school districts during the 1981-82 school year.

Conclusions and Recommendations

The results of this study point clearly to the need and timeliness of incorporating instructional technology knowledge and skills in personnel preparation efforts for individual's serving exceptional children in New Mexico's small rural public school districts. As Stile, Wachtel, and Pettibone (1982) have pointed out, instructional technology applications as they relate to rural special education programs can be categorized as follows:

1. Personnel preparation
2. Program management
3. Classroom aids and tools
4. Information acquisition

Insert Figure 1 about here

In the area of personnel preparation, for example, NMSU's special education component is currently developing individualized, competency-based learning modules using the R&D model described by Lloyd McCleary (1982). The modules are currently being field-tested in an introductory special education survey class (SPED 450) as were micro-computerized unit examinations in a previous semester (Stile & Pettibone, 1983). In turn, both technologies will be applied in future NMSU field-based endorsement and masters-level coursework.

In terms of program management, NMSU preservice and inservice students are being trained to apply various human cybernetics models in their programs (Stile, 1981). In addition, training has been provided in the area of computer-managed instruction (CMI). As Whitney has recently pointed out (1982):

Once pretest information has been obtained, CMI programs may perform an array of management functions ranging from development of individual learning profiles and individual instructional programs (IEPs), to the production of groupings and posttests for assessing mastery of particular instructional sequences. (p.82)

Relative to technologies which have application in the rural special education classroom for direct instructional purposes, NMSU students have been trained to use validated paper-pencil packages such as Utah State University's CAM materials (Casto, Baer,

Hoagland, & Peterson, 1978) and computer-assisted instruction (CAI) software packages such as those produced by Developmental Learning Materials (DLM) for remediation in mathematics. Beginning in the Fall, 1983 Semester, competencies in CAI will be a requirement for successful completion of the NMSU Elementary Student Teaching Block.

Information acquisition technology which has already proven useful to rural special educators include national information systems such as the Educational Resources Information Center (ERIC) which has been supported for several years by the National Institute of Education. Of particular interest to rural special educators is the ERIC Clearinghouse on Rural Education and Small Schools (ERIC/CRESS) which is located at NMSU. Inservice and preservice competencies for NMSU special education students have included ERIC/CRESS information retrieval for the past several years.

Instructional (or "educational") technology presently exists in the form of hardware, software, and systems which are available for immediate application in rural/remote special education programs. However, adoption of such technology is often hindered in such areas due to limited funds, lack of training, and attitudinal barriers.

Start-up costs are often high, but they must be balanced against the potential long-term gains in added productivity and needed services for rural special education personnel and their exceptional students. In the authors' view, for example, rural change agents should compare the cost effectiveness of microcomputerized teacher-training tutorials (Love, 1982) and paper-pencil instructional packages in relation to transportation and per diem costs for the itinerant teacher/teacher-

training model. Although microcomputers still represent a sizable initial expenditure, costs continue to decrease while labor costs increase (Hofmeister & Thorkildsen, 1981). Put still another way (ERIC, 1982), as such technologies as CAI and CMI systems grow increasingly powerful and continue to drop in price, they should be considered to be an investment--not an expense.

Training (e.g., microcomputer literacy) must begin at the pre-service level and then be augmented by vigorous inservice efforts. It would seem that rural administrators must insist on both types of training for their personnel since instructional technology appears to hold promise for rural special education programs.

Attitudinal barriers present a more difficult challenge. Many educators are threatened by the new technology. Hopefully, exposure and hands-on experience in preservice and inservice training will go far in alleviating such fears. Optimistically, Whitney (1982) was accurate when he projected that literacy for teachers in technology such as CAI "will lead to improved, more effective instructional and management systems which in turn will raise the quality of education for all our children" (p. 92).

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Table 1

Need for Inservice Training in Specific Areas for Special Education Teachers and
Related Services Professionals in the Small Rural Public School Districts

Area	Frequency ^a		Frequency Agree ^b		Total Individual "Yes" Responses ^c	
	Agree	Disagree	Yes	No	Number	%
Curriculum Content	10 (58.8)	7 (41.2)	8 (47.1)	2 (11.8)	23	(67.6)
Instructional Strategies	10 (58.8)	7 (41.2)	6 (35.3)	4 (23.5)	19	(55.9)
State Special Education Standards	12 (70.6)	5 (29.4)	7 (41.2)	5 (29.4)	19	(55.9)
Parent Training	9 (52.9)	8 (47.1)	6 (35.3)	3 (17.6)	20	(58.8)
Behavior Management	14 (82.3)	3 (17.6)	8 (47.1)	6 (35.3)	19	(55.9)
Assessment/Diagnosis	9 (52.9)	8 (47.1)	8 (47.1)	1 (5.9)	24	(72.7)
Evaluating Student Progress	13 (76.5)	4 (23.5)	7 (41.2)	6 (35.3)	18	(52.9)
Due Process/Procedural Safeguards	13 (76.5)	4 (23.5)	7 (41.2)	6 (35.3)	18	(52.9)
Special Education Placement Process	10 (58.8)	7 (41.2)	3 (17.6)	7 (41.2)	13	(38.2)
Instructional Technology	14 (82.3)	3 (17.6)	14 (82.3)	0 (0.0)	31	(91.2)

^aIndicates frequency and percentage of agreement and disagreement in responses between the teachers and administrators in the 17 school districts.

^bIn those districts where there was agreement in response between the teachers and administrators, indicates nature of response and percentage of total districts.

^c $n = 34$.

Table 2

Perceived Usefulness and Effectiveness of Instructional
Technology in 17 Small Rural Public School Districts

Area	Frequency ^a		Frequency Agree ^b		Total Individual "Yes" Responses ^c	
	Agree	Disagree	Yes	No	Number	%
Usefulness						
Staff Recruitment	13 (76.5)	4 (23.5)	1 (5.9)	12 (64.7)	6	(17.6)
Staff Retention	12 (70.6)	5 (29.4)	1 (5.9)	11 (64.7)	7	(20.6)
Provision of Special Services	14 (82.3)	3 (17.6)	14 (82.3)	0 (0.0)	31	(91.2)
Reduction of Cost of Services	9 (52.9)	8 (47.1)	2 (11.8)	7 (41.2)	12	(35.3)
Effectiveness						
Competency would improve Special Education Teacher's Effectiveness in the Classroom	15 (88.2)	2 (11.8)	15 (88.2)	0 (0.0)	32	(94.1)
Competency would Improve Special Education Administrator's Effective- ness Relative to Development of the Total Special Education Classroom	9 (52.9)	8 (47.1)	4 (23.5)	5 (29.4)	16	(47.1)

^a Indicates frequency and percentage of agreement and disagreement in responses between the teachers and administrators in the 17 school districts.

^b In these districts where there was agreement in response between the teacher and administrators, indicates nature of response and percentage of total districts.

^c $n = 34$.

<u>Personnel Preparation</u> . Interactive Television . Microcomputer CAI . Microcomputer-Assisted Test Administration . Videodisc Instruction . Paper-Pencil Instructional Modules	<u>Program Management</u> . Human Cybernetic Models for Data-Based Decision Making . Administrative Applications of Computers (CMI)
<u>Classroom Aids and Tools</u> . Packaged Instruction . Microcomputers . Videodisc . The Optacon . The Talking Calculator . The Kurzwell Reading Machine . Radar Systems	<u>Information Acquisition</u> . Educational Resources Information Center (ERIC) . "Special Net"

Figure 1: Four Major Areas of Concern in Rural Special Education and Selected Applications of Instructional Technology